上海贝岭 SHANGHAI BELLING

BL8591

100mA High PSRR, Fast Response Linear Regulator

DESCRIPTION

BL8591 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

BL8591 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

BL8591 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

BL8591 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

BL8591 is available in SOT23-3, SOT23-5, SOT89-3, SOT89-5 and TO92 packages which are lead free. It also can available in these packages with lead.

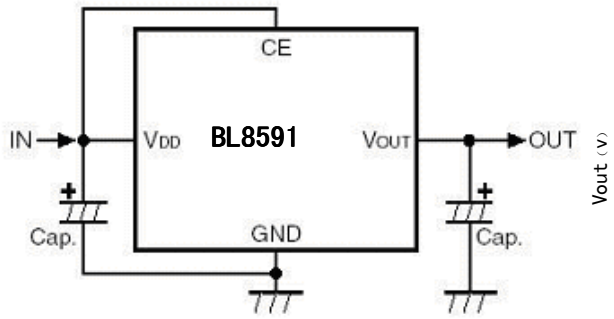
FEATURES

- Low Power Consumption: 75uA（Typ.）
- Low Output Noise (47uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage: 0.1V@100mA (Typ.)
- High Ripple Rejection: 66dB@100Hz (Typ.)
- Low Temperature Coefficient: ± 100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Build-in Chip Enable and Discharge Circuit
- Output Voltage Range: 1.2V~4.5V (Customized on command every 0.1V step)
- Highly Accurate: ±2% (±1% customized)
- Output Current Limit

APPLICATIONS

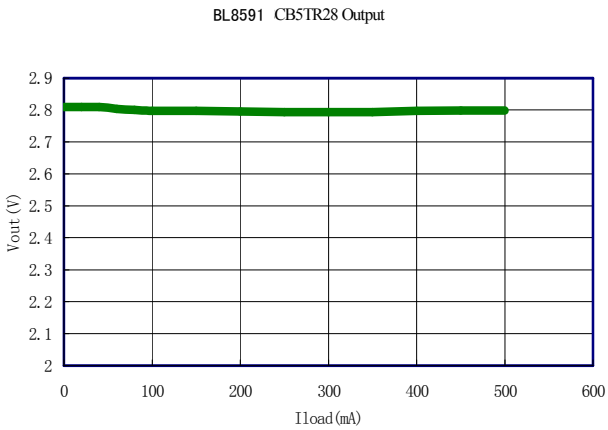
- Power Source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

TYPICAL APPLICATION



NOTE: Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF/2.2uF) are recommended in all application circuit.

ELECTRICAL CHARACTERISTICS



ORDERING INFORMATION

BL8591 [1][2][3][4][5]

Code	Description
[1]	Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std.
[2]	Package type: B3:SOT-23-3 B5:SOT-23-5 C3:SOT-89-3 C5:SOT89-5 H:TO-92
[3]	Packing type: TR:Tape&Reel (Standard) BG:Bag(TO-92)
[4]	Output voltage: e.g. 12=1.2V 18=1.8V 45=4.5V
[5]	Voltage accuracy: Blank(default)=±2%

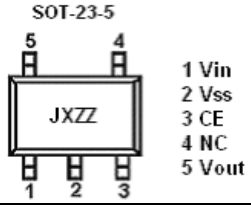
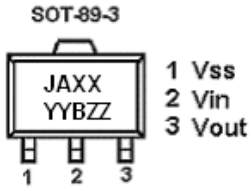
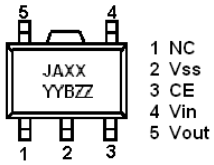
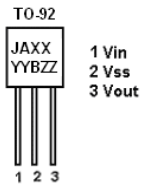
MARKING DESCRIPTON

J: Product Code(SOT23-3&SOT23-5)
X: Output Voltage(SOT23-3&SOT23-5)

Vout	Code	Vout	Code	Vout	Code
1.2V	2	2.5V	$\overline{5}$	3.8V	$\underline{8}$
1.3V	3	2.6V	$\overline{6}$	3.9V	$\underline{9}$
1.4V	4	2.7V	$\overline{7}$	4.0V	$\underline{0}$
1.5V	5	2.8V	$\overline{8}$	4.1V	$\underline{1}$
1.6V	6	2.9V	$\overline{9}$	4.2V	$\underline{2}$
1.7V	7	3.0V	$\underline{0}$	4.3V	$\underline{3}$
1.8V	8	3.1V	$\underline{1}$	4.4V	$\underline{4}$
1.9V	9	3.2V	$\underline{2}$	4.5V	$\underline{5}$
2.0V	$\overline{0}$	3.3V	$\underline{3}$		
2.1V	$\overline{1}$	3.4V	$\underline{4}$		
2.2V	$\overline{2}$	3.5V	$\underline{5}$		
2.3V	$\overline{3}$	3.6V	$\underline{6}$		
2.4V	$\overline{4}$	3.7V	$\underline{7}$		

Z: The Year of manufacturing,"7" stands for year 2007,"8" stands for year 2008,and "$\overline{0}$" stands for year 2010.
Z: The week of manufacturing. "A" stands for week 1,"Z" stands for week 26,"$\overline{A}$" stands for week 27,"$\overline{Z}$" stands for week 52.

PIN CONFIGURATION

Product Classification		BL8591CB3TR□□□
Marking		SOT-23-3
JXZZ	J:Product Code X: Output Voltage ZZ:Data Code	
Product Classification		BL8591CB5TR□□□
Marking		SOT-23-5
JXZZ	J:Product Code X: Output Voltage ZZ:Data Code	
Product Classification		BL8591CC3TR□□□
Marking		SOT-89-3
JAXX YYBZZ	JA:Product Code XX: Output Voltage YY:Lot No. B:Fab code ZZ:Data Code	
Product Classification		BL8591CC5TR□□□
JAXX YYBZZ	JA:Product Code XX: Output Voltage YY:Lot No. B:Fab code ZZ:Data Code	SOT-89-5 
Product Classification		BL8591CHBG□□□
JAXX YYBZZ	JA:Product Code XX: Output Voltage YY:Lot No. B:Fab Code ZZ:Data Code	TO-92 

Vss	Ground Pin
Vin	Supply Voltage Input
Vout	Output Voltage
CE	Chip Enable
NC	No Connection

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		15V
Operating Junction Temperature(Tj)		125°C
Output Current		500mA
Ambient Temperature(Ta)		-40°C –85°C
Power Dissipation	SOT23-3	250mW
	SOT23-5	250mW
	SOT89-3	500mW
	SOT89-5	500mW for normal application 800mW with 10mmx20mm heat dissipation coil
	TO-92	500mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

Item	Min	Recommended	Max.	Unit
Input Voltage Range			14	V
Ambient Temperature	-40		85	°C

ELECTRICAL CHARACTERISTICS

（Test Conditions: Cin=1uF,Cout=3.3uF,TA=25°C, unless otherwise specified.）

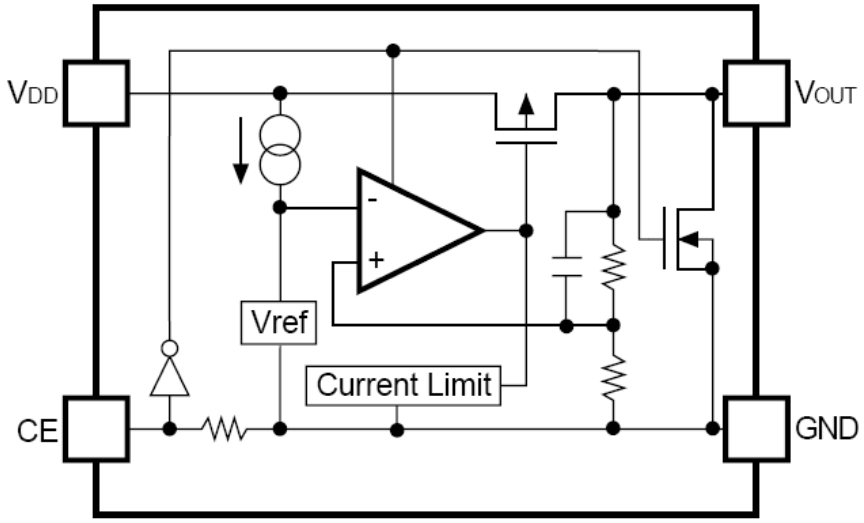
BL8591, For Arbitrary Output Voltage

Symbol	Parameter		Conditions	Min	Typ	Max	Units
Vin	Input Voltage					14	V
Vout	Output Voltage	Vout>1.5V	Vin=Set Vout+1V 1mA≤Iout≤30mA	Vout x0.98	Vout	Vout X1.02	V
		Vout<=1.5V		Vout -0.03	Vout	Vout +0.03	
Iout (Max.)	Maximun Output Current		Vin-Vout=1V	100			mA
Vdrop[1]	Dropout Voltage,Vout≥2.8V		Iout=100mA		88	120	mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation		Iout=40mA 2.8V≤Vin≤8V		0.05	0.2	%/V
$\Delta Vout / \Delta Iout$	Load Regulation		Vin=Set Vout+1V 1mA≤Iout≤500mA		20	40	mV
Iss	Supply Current		Vin=Set Vout+1V		75	90	uA

Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=GND		0.1	1.0	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection	F=100Hz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		200		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V

NOTE1:
*Vdrop=Vin1-(Vout2*0.98) Vout2 is the output voltage when Vin=Vout1+1.0V and Iout=100mA.*
Vin1 is the input voltage at which the output voltage becomes 98% of Vout1 after gradually decreasing the input voltage.

BLOCK DIAGRAM



Explanation

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BL8591 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

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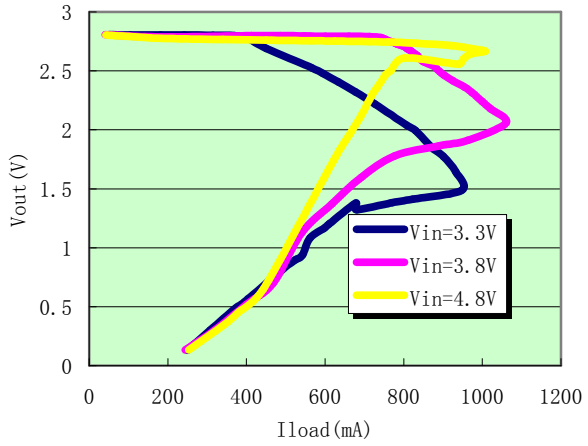
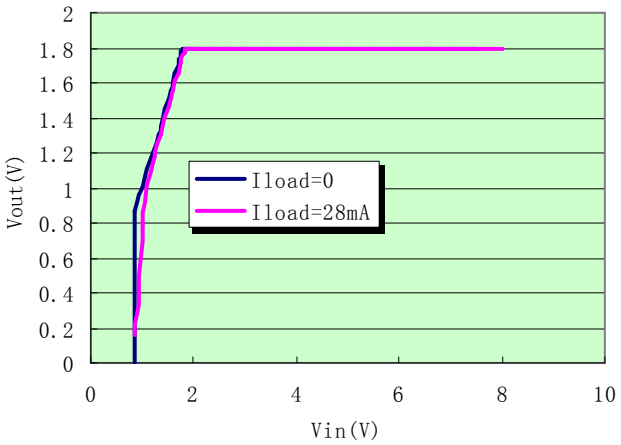
TYPICAL PERFORMANCE CHARACTERISTICS

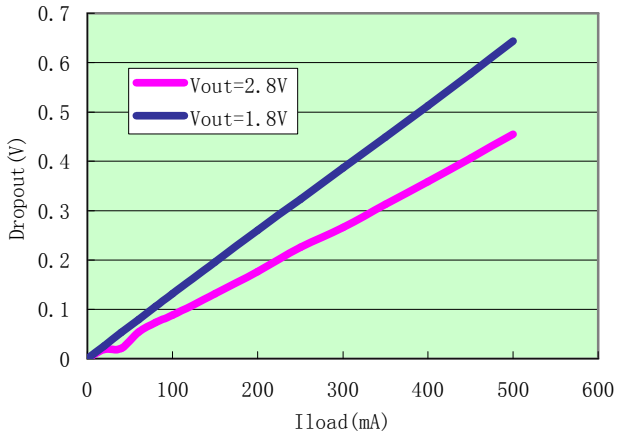
1) Output Voltage vs. Output Current (With Output Short Protection)



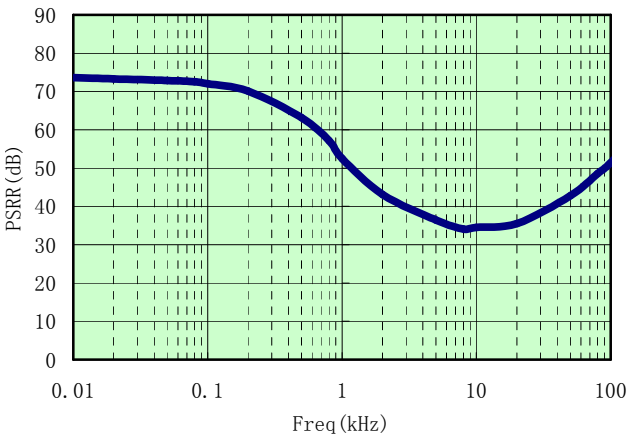
2) Output Voltage vs. Input Voltage



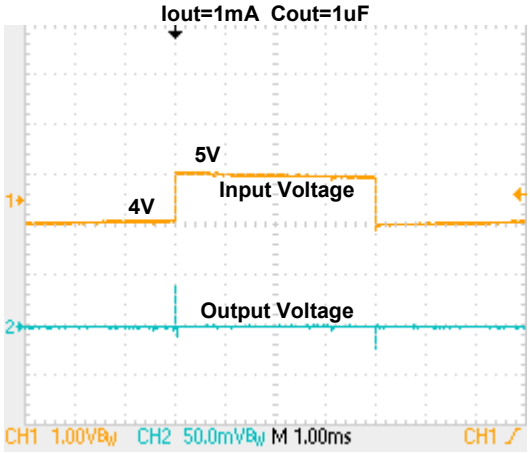
3) Dropout Voltage vs. Output Current

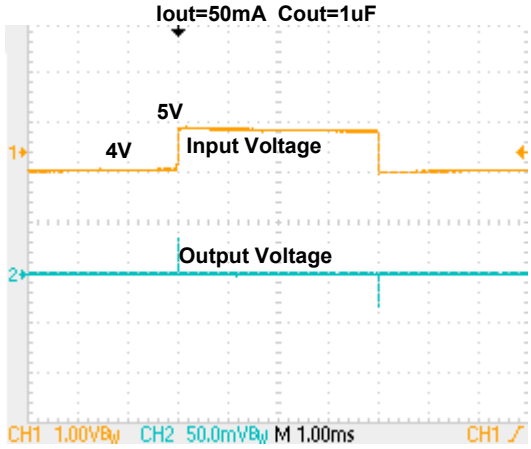


4) Ripple Rejection vs. Frequency

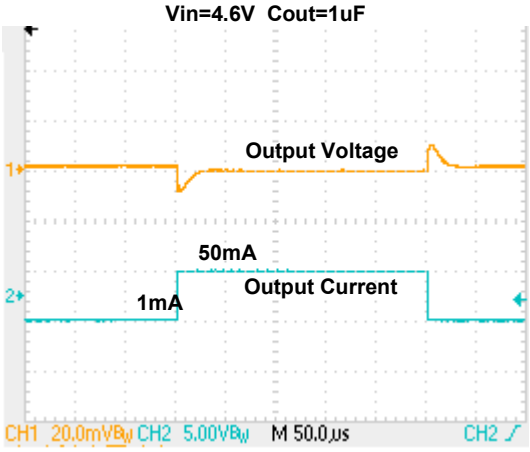


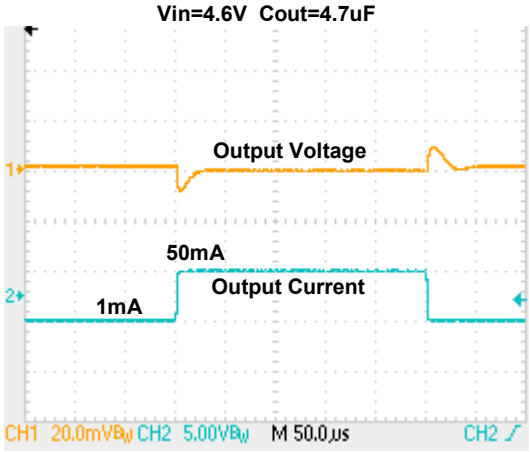
5) Line transient response

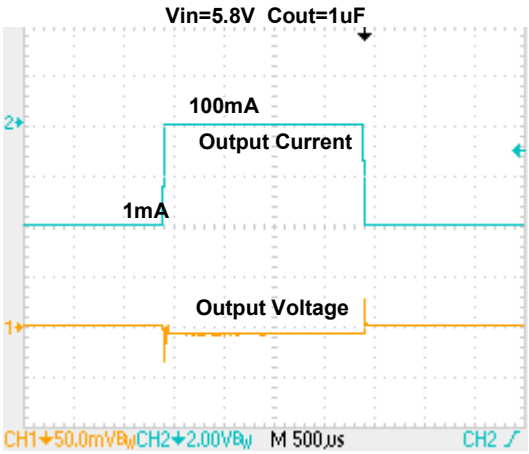


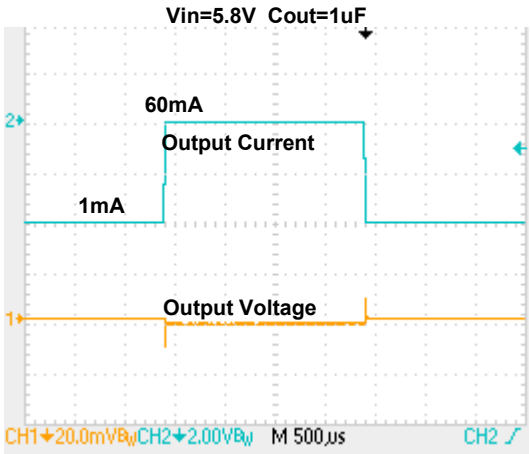


6) Load transient response

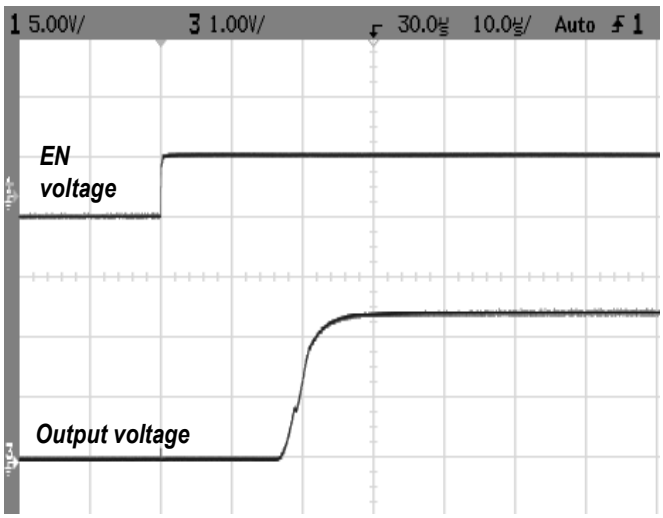




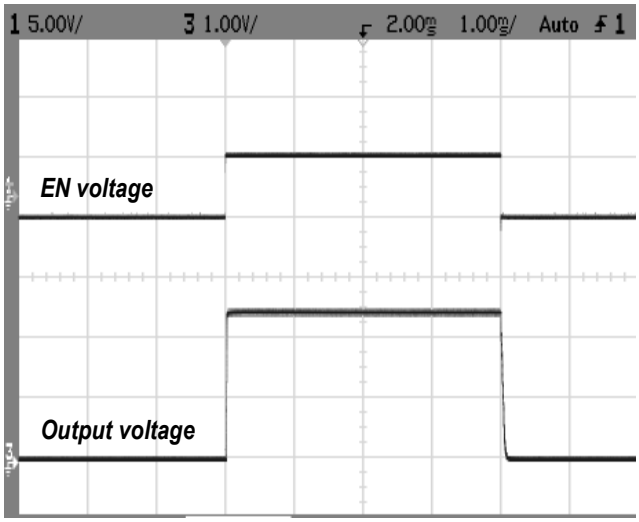




7) Startup Response



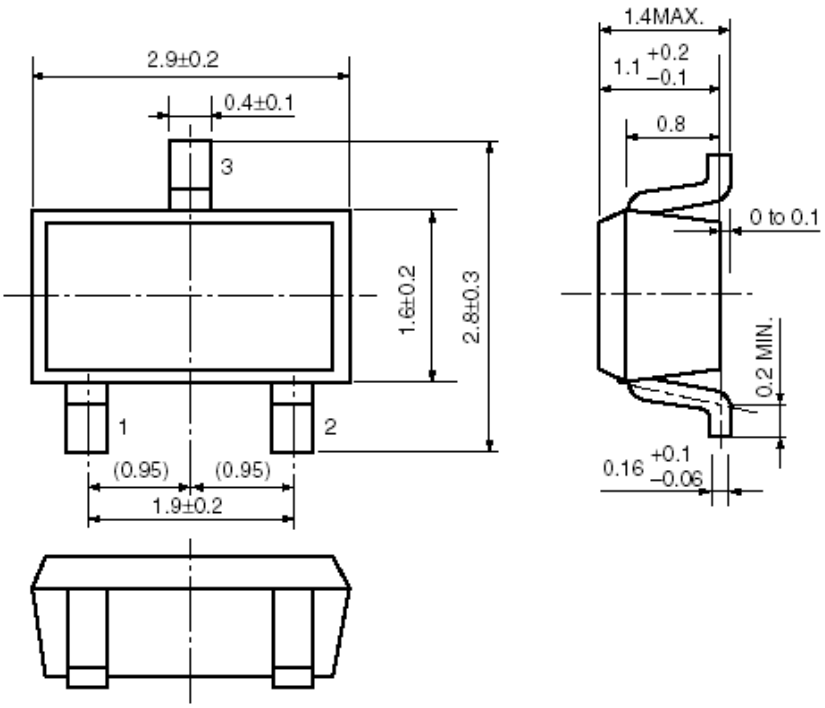
8) Shutdown Response



PACKAGE LINE

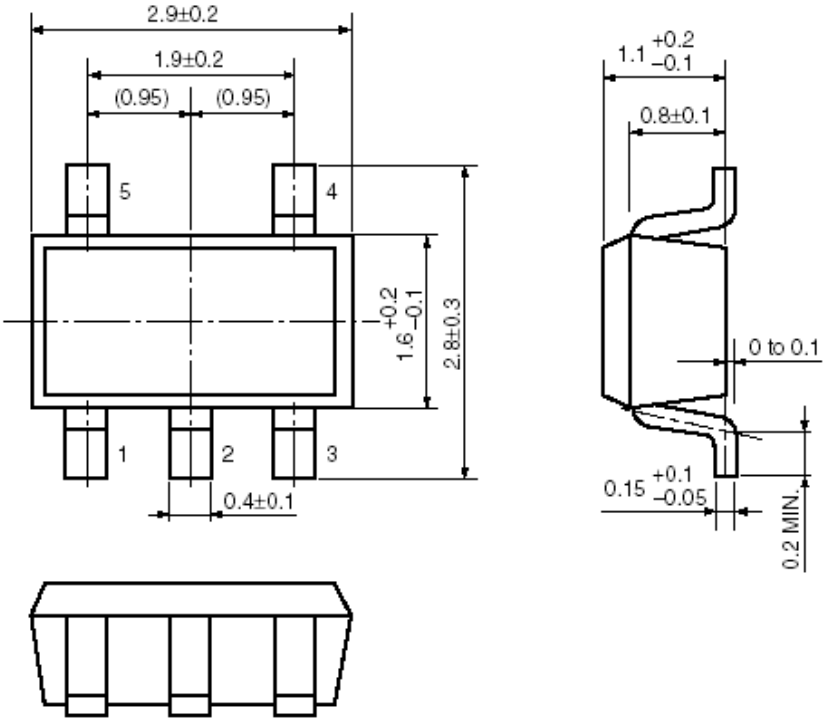
Package	SOT-23-3	Devices per reel	3000Pcs	Unit	mm

Package dimension：



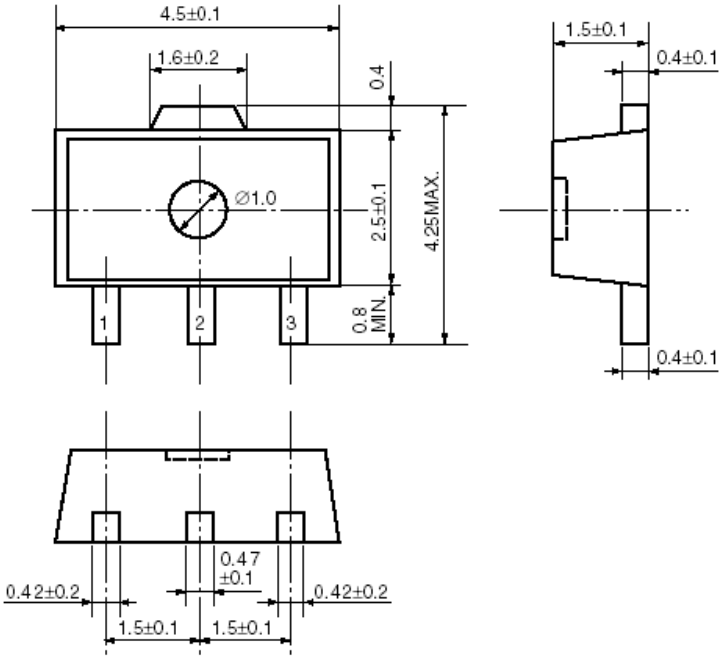
Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



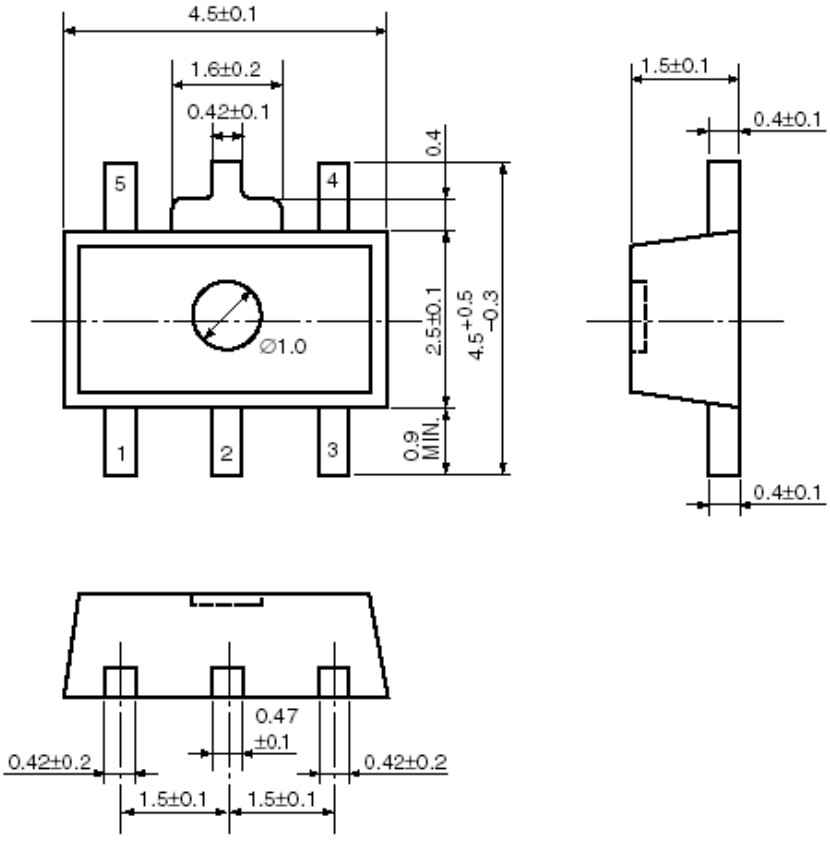
Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm

Package Dimension:



Package	SOT89-5	Devices per reel	1000Pcs	Unit	mm

Package Dimension:



Package	TO-92	Devices per Bag	1000Pcs	Unit	mm

Package Dimension:

TO-92